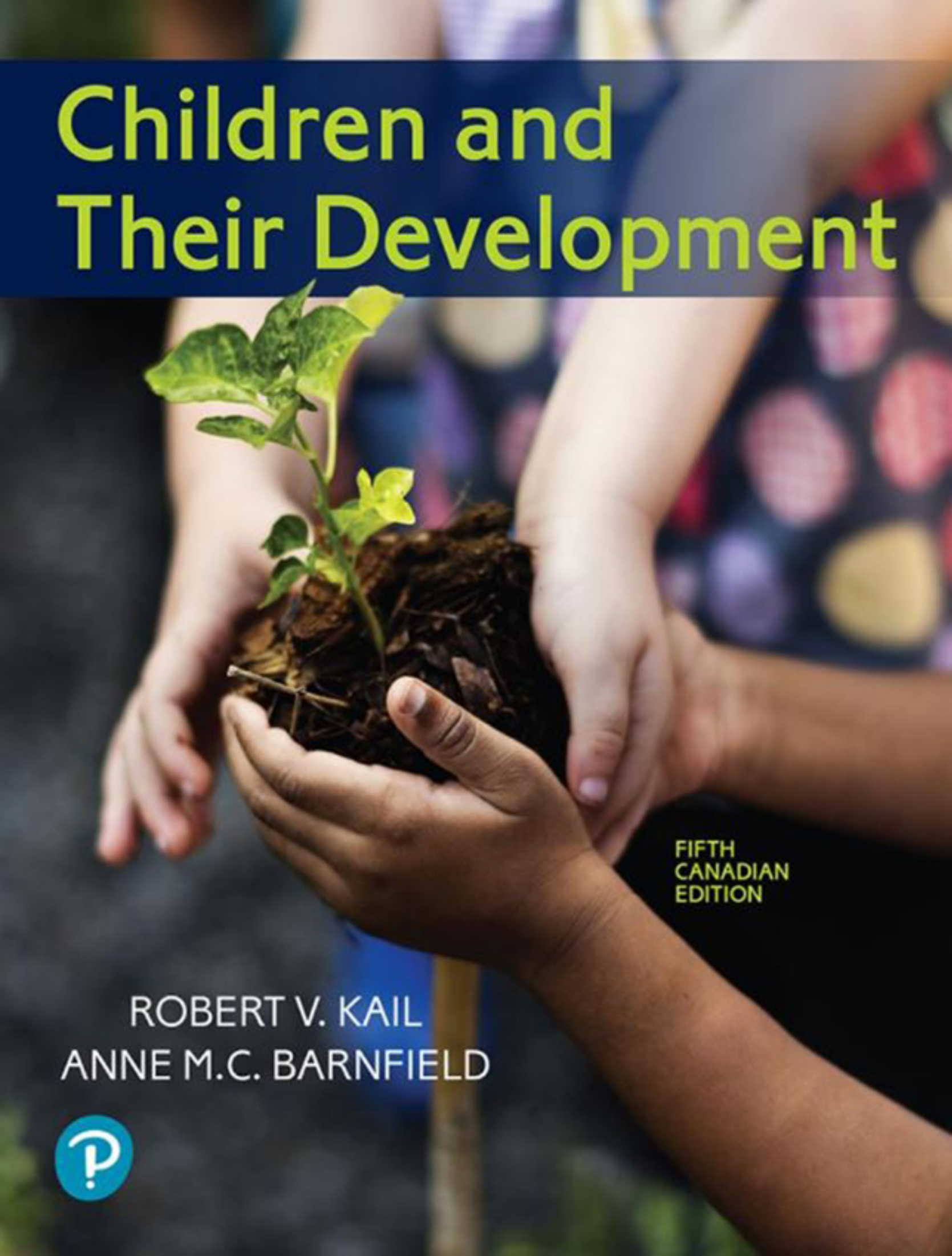
Children and Their Development



FIFTH CANADIAN EDITION

ROBERT V. KAIL
ANNE M.C. BARNFIELD

Children and Their Development

Fifth Canadian Edition

Robert V. Kail

Anne M. C. Barnfield

Please contact https://support.pearson.com/getsupport/s/contactsupport with any queries on this content.

Pearson Canada Inc., 26 Prince Andrew Place, North York, Ontario M3C 2H4.

Print Offer: ISBN 978-0-13-672830-6
Instructor's Edition: ISBN 978-0-13-672821-4

ScoutAutomatedPrintCode

Library and Archives Canada Cataloguing in Publication

Title: Children and their development / Robert V. Kai, Anne M.C. Barnfield.
Names: Kail, Robert V., author. | Barnfield, Anne M. C., author.
Description: Fifth Canadian edition. | Includes bibliographical references and indexes.
Identifiers: Canadiana 20200356356 | ISBN 9780136728306 (print offer; loose-leaf) | ISBN 9780136728214 (softcover; instructor edition)
Subjects: LCSH: Child development—Textbooks. | LCGFT: Textbooks.
Classification: LCC HQ767.9 .K33 2020 | DDC 305.231—dc23

Brief Contents

This page is intentionally left blank

Contents

List of Boxes

About This Course

Revel is an interactive eText platform that is a fully mobile, interactive learning environment. Revel combines the text's narrative content with embedded media and interactive assessments, enabling students to read, practise, and study in one continuous experience. Revel is fully digital and responsive to any device and is available online and offline.

Revel was designed specifically to help get students to read and stay on top of their course work. The accessibility of Revel means that students can literally take their text wherever they go and have the flexibility to do their reading and homework any time. And we believe this flexibility is what today's students are looking for.

In the Revel version of the text, all major sections of every chapter end with review quizzes. Research shows that students learn material better when they are tested frequently; thus, these section quizzes, as well as the test questions at the end of every chapter, should be helpful learning aids. Instructors have the option of assigning these quizzes and giving course credit for correct answers.

Like many professors-turned-textbook-authors, Robert Kail wrote this book because none of the texts available met the aims of the child-development classes that he taught. This, the fifth Canadian edition, does so from a Canadian perspective. In the next few paragraphs, we want to describe those aims and how this book is designed to achieve them.

GOAL 1: USE EFFECTIVE PEDAGOGY TO PROMOTE STUDENTS' LEARNING. The focus on a student-friendly book begins with the structure of the chapters. Each chapter consists of three or four modules that provide a clear and well-defined organization to the chapter. Each module begins with a set of learning objectives and a vignette that introduces the topic to be covered. Special topics that are set off in other textbooks as feature boxes are fully integrated with the main text. Every feature ends with at least one critical thinking question to encourage students' engagement with the material presented. Each module ends with several questions intended to help students check their understanding of the major ideas in the module

The end of each chapter includes some additional study aids. The Summary is a concise review of the chapter. Unifying Themes links the ideas in the chapter to a major developmental theme. See for Yourself suggests activities that allow students to observe firsthand topics in child development. Key Terms is a list of all of the important boldfaced terms appearing in the chapter. These different pedagogical elements *do* work; students using previous editions frequently comment that the book is easy to read and presents complex topics in an understandable way.

GOAL 2: USE FUNDAMENTAL DEVELOPMENTAL ISSUES AS A FOUNDATION FOR STUDENTS' LEARNING OF RESEARCH AND THEORY IN CHILD DEVELOPMENT. Child-development courses sometimes overwhelm students because of the sheer number of topics and studies. In fact, today's child-development science is really propelled by a concern with a handful of fundamental developmental issues, such as the continuity of development and the roles of nature and nurture in development. In *Children and Their Development*, four of these foundational issues are introduced in Chapter 1, then reappear in subsequent chapters to scaffold students' understanding. As we mentioned already, the end of the chapter includes the Unifying Themes feature, in which the ideas from the chapter are used to illustrate one of the foundational themes. By reappearing throughout the text, the themes remind students of the core issues that drive child-development science.

GOAL 3: TEACH STUDENTS THAT CHILD-DEVELOPMENT SCIENCE DRAWS ON MANY COMPLEMENTARY RESEARCH METHODS, EACH OF WHICH CONTRIBUTES UNIQUELY TO SCIENTIFIC PROGRESS. In Module 1.4, we portray child-development research as a dynamic process in which scientists make a series of decisions as they plan their work. In the process, they create a study that has both strengths and weaknesses. Each of the remaining chapters of the book contains a Focus on Research feature that illustrates this process by showing—in an easy-to-read, question-and-answer format—the different decisions that investigators made in designing a particular study. The results are shown, usually with an annotated figure, so that students can learn how to interpret findings. The investigators' conclusions are described, and we end each Focus on Research feature by mentioning the kind of converging evidence that would strengthen the authors' conclusions. Thus, the research methods introduced in Chapter 1 reappear in every chapter, depicting research as a collaborative enterprise that depends on the contributions of many scientists using different methods.

GOAL 4: SHOW STUDENTS HOW FINDINGS FROM CHILD-DEVELOPMENT RESEARCH CAN IMPROVE CHILDREN'S LIVES. Child-development scientists and students alike want to know how the findings of research can be used to promote children's development. In Chapter 1 of *Children and Their Development*, we describe the different means by which researchers can use their work to improve children's lives. In the chapters

that follow, these ideas come alive in the Children's Lives feature, which provides examples of research-based solutions to common problems in children's lives. From these features, students realize that child-development research really matters—that parents, teachers, and policymakers can use research to foster children's development.

Acknowledgments

For the Canadian editions of the book, I would like to thank those who helped with the original work. In addition, I would like to thank the following reviewers for their many helpful comments and suggestions:

Tina Bonnett, Fanshawe College
Jessica Chambers, Dawson College
Leanna Closson, Saint Mary's University
Kathleen Corrigall, MacEwan University
Sandra Hessels, Huron University College at Western University
Deepthi Kamawar, Carleton University
Alissa Pencer, Dalhousie University
Jocelyn Proulx, University of Manitoba
Jill Singleton-Jackson, University of Windsor
Joel St. Pierre, Mohawk College
Donna Varga, Mount Saint Vincent University
Anthony Volk, Brock University
Tara Vongpaisal, MacEwan University

I must also thank Ky Pruesse for the initial concept of the Canadian edition; Kimberley Veevers, Executive Portfolio Manager, who started the editing process; Martina van de Velde, who continued the process; and, for the fifth edition, Tamara Capar, Nicole Mellow, Katherine Baker-Ross, Susan Bindernagel, and Pradeep Subramani who brought the book through production. I would also like to thank Annamarie Chalikakis for her invaluable assistance when this whole process began and Brescia students Kasha McEwen (with the first edition), Sileny Chamorro (for the second edition), and Zeena Wong (for the fourth edition) for their assistance in retrieving information and performing literature searches. Thanks also to Chinthe the cat for his calming influence. My husband, Richard Van de Wetering, as ever, deserves special thanks for his patience and understanding.

—Anne M. C. Barnfield

Anne Barnfield and her cat, Chinthe

Dedication

To Laura, Matt, and Ben

—Robert V. Kail

To my father and stepmother, Philip and Christine Barnfield—educators

—Anne M. C. Barnfield

Content Highlights

The fifth Canadian edition of *Children and Their Development* has further improvements to the Canadian perspective, highlighting work by Canadian researchers and including more on the Canadian social and cultural perspectives. In updating this textbook, we have added new citations and references to research published since the fourth edition. Demographic information and statistics, such as birth rates, have been revised where new information exists. There has also been an active attempt to include more information on Canada's Indigenous populations (First Nations, Métis, and Inuit peoples) and their particular situations, issues, and views. We have also added new content to every chapter. Of particular note:

Chapter 1 has some revision of descriptions of theories in child development, with additional information and further explanation of the theories.

Chapter 2 has updated information, with much revised material on epigenetics and on gene editing, including recent controversies about the use genome editing in humans.

Chapter 3 has updated Canadian information with new material on environmental pollutants and water contamination issues, particularly regarding First Nations communities. References to Health Canada guidelines have also been updated to reflect more recent publications. Other additional material includes information on natural variation of duration of pregnancy, socioeconomic risks related to teenage pregnancy, and further research evidence of visual perception tasks for assessment of Fetal Alcohol Syndrome Disorder (FASD).

Chapter 4 includes additions to the section on nutrition, including information on issues regarding access to "wildfoods" and related food insecurity for Indigenous Peoples. There is note of media influences on adolescents regarding body image, and revised information on obesity. Information on the link of obesity to type-2 diabetes, and the related issues for Indigenous Peoples, has been included. The information on childhood accidents, injuries, and deaths has been revised and updated. There is also further information on brain plasticity and development, to take into account recent findings in this area.

Chapter 5 has revised coverage of face perception, particularly regarding face perception issues in autism spectrum disorder (ASD). There have also been updates to the section on ADHD, with inclusion of information on diagnosis of ADHD in Indigenous populations. Information about issues with grasping and grip strength in children and a decline in ability, perhaps

related to use of modern technology, has been added. The section on physical fitness and sport participation has been much updated, with information added regarding sport participation, erosion of play, sport participation, and why children may drop out of sports.

Chapter 6 has updates on development of theory of mind in typical and atypical (e.g., delay due to deafness or autism spectrum disorder) groups, and additional information on the connectivism theory view of cognitive development. Information on evidence of enhanced understanding of theory of mind from reading of literature has also been included.

Chapter 7 updates include additional information regarding metamemory and metacognitive processes, the results of Canada's scores in the most recent OECD PISA rankings, and information on oral traditions and Indigenous children's literacy skill development. There is also expanded content regarding use of computers and children's access to the internet at home.

Chapter 8 has updates to the information on theories of intelligence, and on limitations of application of generic forms of testing to Indigenous Peoples; updates have also been made regarding influence of socioeconomic and cultural status. There is inclusion of the response to intervention (RTI) model, a form of in-school intervention related to dynamic assessment. The sections on intellectual disability and learning disorders have been revised to better reflect current information and DSM-5 criteria.

Chapter 9 contains additional information on early language acquisition and updated references from work by Janet Werker's research team at the University of British Columbia and updated information on effects of infant-directed speech with infants who have cochlear implants. There are also updates on the work by Ellen Bialystok of York University and colleagues on influences of bilingualism both linguistically and cognitively. Further information on supporting Indigenous children's traditional language learning has been added to the chapter. There is also an expanded discussion of the social-interactionist view of children's acquisition of grammar.

Chapter 10 includes updates regarding mothers' and work and division of childcare. There are major additions to information regarding the role of fathers, particularly Indigenous fathers, and socio-cultural influences on attachment.

Chapter 11 has updates on immigration statistics and Canada's ethnic diversity, on identity formation, and much additional information on ethnic identity development for Indigenous youth. There is also now further information on the "growth mindset" concept.

Chapter 12 includes updated information on young advocates as examples in promoting moral reasoning, on empathy, and on cyberbullying. There is also further information on the impact of the family regarding aggressive behaviour, with acknowledgement of specific issues affecting Indigenous families.

Chapter 13 has updated information on depression statistics in the teenage years. There is much additional information on issues of gender identity development, including discussion of the term "Two-Spirit." Throughout, there is also discussion of how our thinking about gender and gender identity has evolved in recent years.

Chapter 14 contains much new material on family structure and systems and on views of "family," with extended information on cultural and socioeconomic influences on parenting styles and further updates to the feature on grandmothers in Indigenous families. There is also additional information on the negative consequences of physical punishment in childhood, child abuse, adoption, adolescent sexuality and sexual identity, and gangs as a form of adolescent group.

To the Student

In this book, we'll trace children's development from conception through adolescence. Given this goal, you may expect to find chapters devoted to early childhood, middle childhood, and the like. But this book is organized differently—around topics. Chapters 2 through 5 are devoted to the genetic and biological bases of human development, and the growth of perceptual and motor skills. Chapters 6 through 9 cover intellectual development—how children learn, think, reason, and solve problems. Chapters 10 through 14 concern social and emotional development—how children acquire the customs of their society and learn to play the social roles expected of them.

This organization reflects the fact that when scientists conduct research on children's development, they usually study some specific aspect of how a child develops. For example, a researcher might study how memory changes as children grow or how friendship in childhood differs from that in adolescence. Thus, the organization of this book reflects the way researchers actually study child development.

Organization of Chapters and Learning Aids

Each chapter includes several modules that are listed at the beginning of each chapter. Each module begins with a set of learning objectives phrased as questions, a mini-outline listing the major subheadings of the module, and a brief vignette that introduces the topics to be covered in the module. The learning objectives, mini-outline, and vignette tell you what to expect in the module.

Each module in Chapters 2 through 14 includes at least one special feature that expands or highlights a topic. There are four different kinds of features:

Focus on Research provides details on the design and methods used in a particular research study. Closely examining specific studies demystifies research and shows that scientific work is a series of logical steps conducted by real people.

Cultural Influences shows how culture influences children and illustrates that developmental journeys

are diverse. All children share the biological aspects of development, but their cultural contexts differ. This feature celebrates the developmental experiences of children from different backgrounds.

Children's Lives shows how research and theory can be applied to improve children's development. These practical solutions to everyday problems show the relevance of research and theory to real life, and show how results from research are used to create social policy that is designed to improve the lives of children and their families.

Spotlight on Theories examines an influential theory of development and shows how it has been tested in research.

Two other elements are designed to help you focus on the main points of the text. First, whenever a key term is introduced in the text, it appears in ***bold italic*** like this, and the definition appears in **black boldface type.** This format should make key terms easier for you to find and learn. Second, summary tables appear periodically throughout the book, reviewing key ideas and providing a capsule account of each.

Each module concludes with **Check Your Learning** questions to help you review the major ideas in that module. There are three kinds of questions: recall, interpret, and apply.

If you can answer the questions in Check Your Learning correctly, you are on your way to mastering the material in the module. However, do not rely exclusively on Check Your Learning as you study for exams. The questions are designed to give you a quick check of your understanding, not a comprehensive assessment of your knowledge of the entire module.

At the very end of each chapter are some additional study aids. The **Summary** provides a concise review of the entire chapter, organized by module and the primary headings within the module. **Unifying Themes** links the contents of the chapter to the developmental themes introduced in Module 1.3. **See for Yourself** suggests some simple activities for exploring issues in child development on your own. **Key Terms** presents of all the important terms that appear in the chapter, along with their definitions.

Terminology

Every field has its own terminology, and child development is no exception. We use several terms to refer to different periods of infancy, childhood, and adolescence. Although these terms are familiar, we use each to refer to a specific range of ages:

Newborn	Birth to 1 month
Infant	1 month to 1 year
Toddler	1 to 2 years
Preschooler	2 to 6 years
School-age child	6 to 12 years
Adolescent	12 to 18 years
Adult	18 years and older

Sometimes, for the sake of variety, we use other terms that are less tied to specific ages, such as *babies, youngsters,* and *elementary-school children.* When we do, you will be able to tell from the context what groups are being described.

We also use very specific terminology in describing research findings from different cultural and ethnic groups. The appropriate terms to describe different cultural, racial, and ethnic groups change over time. For example, the term *Indigenous Peoples* is used to mean the original inhabitants of this land who live in Canada. In discussions of legislation or material from Statistics Canada, *Aboriginal, Indian, First Nations, Métis,* and *Inuit* may be used to conform to the source material. In another example, the terms *coloured people, Negroes, Black Canadians,* and *African Canadians* have all been used to describe Canadians who trace their ancestry to Africa. In this edition, we use the term *Black or Black Canadian* because this emphasizes the unique cultural heritage of this group of people. Following this same line of reasoning, we use the terms *such as European Canadian and Asian Canadian.*

These labels are not perfect. Sometimes they blur distinctions within ethnic groups. For example, the term *Asian Canadian* blurs variations among people whose heritage is East Indian, Japanese, Chinese, or Korean. Whenever researchers identified the subgroups in their research sample, we use the more specific terms in describing results. When you see the more general terms, remember that conclusions may not apply to all subgroups within the group.

A Final Word

Robert Kail wrote the first American edition of this book to make child development come alive for his students at Purdue. Although we can't teach you directly, we hope this book sparks your interest in children and their development. Please let us know what you like and dislike about the book so that it can be improved in later editions. You can email me, Anne Barnfield, at abarnfie@uwo.ca—I'd love to hear from you.

About the Authors

ROBERT V. KAIL is a Distinguished Professor of Psychological Sciences at Purdue University. His undergraduate degree is from Ohio Wesleyan University, and his PhD is from the University of Michigan. Kail is editor of *Child Development Perspectives* and the editor emeritus of *Psychological Science*. He received the McCandless Young Scientist Award from the American Psychological Association, was named the Distinguished Sesquicentennial Alumnus in Psychology by Ohio Wesleyan University, and is a fellow of the Association for Psychological Science. He has also written *Scientific Writing for Psychology: Lessons in Clarity and Style*. His research focuses on cognitive development during childhood and adolescence. Away from the office, he enjoys photography and working out. His website is **http://www2.psych.purdue.edu/~rk/home.html**.

ANNE M. C. BARNFIELD is an Associate Professor of Psychology at Brescia University College. Her undergraduate degree is from the University of London, UK, and her PhD is from the University of Sussex, UK. Barnfield is a manuscript reviewer for the journals *Personality and Individual Differences, Perceptual and Motor Skills*, and the *Human-Animal Interaction Bulletin*. She is a member of the Horses in Education and Therapy International (HETI) Ethics Taskforce, APA Human-Animal Interaction Division, the Society for the Teaching of Psychology, and the Canadian Society for Brain, Behaviour and Cognitive Science. Her research focuses on the beneficial influences of sport participation for children, particularly those with special needs, and applications of Equine Assisted Therapy, with a focus on anxiety disorders. Away from the office, she enjoys karate, archery, and horseback riding. The Brescia University College website is: **http://www.brescia.uwo.ca/**.

Chapter 1
The Science of Child Development

Learning Outcomes

Beginning as a microscopic cell, every person takes a fascinating journey designed to lead to adulthood. This trip is filled with remarkably interesting and challenging events. In this text, we'll trace this journey as we learn about the science of child development, a multidisciplinary study of all aspects of human growth from conception to young adulthood. As an adult, you've already lived the years that are at the heart of this text. We hope you enjoy reviewing your own developmental path from the perspective of child-development research and that this perspective leads you to new insights into the developmental forces that have made you the person you are today.

Chapter 1 sets the stage for our study of child development. We begin, in **Module 1.1**, by looking at philosophical foundations for child development and the events that led to the creation of child development as a new science. In **Module 1.2**, we examine

theories that are central to the science of child development. In **Module 1.3**, we explore themes that guide much of the research in child development. Finally, in **Module 1.4**, we learn about the methods scientists use to study children and their development.

1.1 Setting the Stage

OUTLINE

LEARNING OBJECTIVES

1. What ideas did philosophers have about children and childhood?
2. How did the modern science of child development emerge?
3. How do child-development scientists use research findings to improve children's lives?

Kendra loves her 12-month-old son, Joshua, but she is eager to return to her job as a loan officer at a local bank. Kendra knows a woman in her neighbourhood who has cared for some of her friends' children, and they all think she is wonderful. But deep down, Kendra wishes she knew more about whether this type of care is really best for Joshua. She also wishes that her neighbour's daycare centre had a "stamp of approval" from someone who knows how to evaluate such facilities.

Kendra's question about the best way to care for her infant son is just the most recent in a long line of questions that she has had about Joshua since he was born. When Joshua was a newborn, Kendra wondered if he could recognize her face and her voice. As her son grows, she'll continue to have questions: Why is he so shy at preschool? Should he take classes for gifted children or would he be better off in regular classes? What can she do to be sure that he won't use drugs?

These questions—and hundreds more like them—touch issues and concerns that parents such as Kendra confront regularly as they do their best to rear their children. And parents are not the only ones asking these questions. Many professionals who deal with children—teachers, healthcare providers, and social workers, for example—often wonder what is best for children's development. Does children's self-esteem affect their success in school? Should we believe young children when they claim they have been abused? As well, government officials must decide what programs and laws provide the greatest benefit for children and their families. How does welfare reform affect families? Are teenagers less likely to have sex when they participate in abstinence-only programs?

So many questions, and all of them important! Fortunately, the field of child development, which traces physical, mental, social, and emotional development from conception to maturity, provides answers to many of them. To begin, let's look at the origins of child development as a science.

Historical Views of Children and Childhood

For thousands of years, philosophers have speculated on the fundamental nature of childhood and the conditions that foster a child's well-being, but only since the 19th century have scientists studied child development. The Greek philosophers Plato (428–347 BCE) and Aristotle (384–322 BCE) believed that schools and parents had responsibility for teaching children the self-control that would make them effective citizens. But both philosophers, particularly Aristotle, also worried that too much self-discipline would stifle children's initiative and individuality, making them unfit to be leaders.

Given their interest in education, it's not surprising that Plato and Aristotle also had ideas about knowledge and how it is acquired. Plato believed that experience could not be the source of knowledge because human senses are too fallible. He argued instead that children are born with innate knowledge of many concrete objects (such as animals and people), as well as with knowledge of abstractions (such as courage, love, and goodness). In Plato's view, children's sensory experiences simply trigger

knowledge that they've had since birth. The first time a child sees a dog, her innate knowledge allows her to recognize it as such; no learning is necessary. In contrast, Aristotle denied the existence of innate knowledge, believing instead that knowledge is rooted in perceptual experience. Children acquire knowledge piece by piece, based on the information provided by their senses. Aristotle likened a child's mind to a tablet that is blank, ready for experience to do the writing.

These contrasting views resurfaced during the Age of Enlightenment. The English philosopher John Locke (1632–1704) asserted that the human infant is a *tabula rasa*, or "blank slate," and claimed that experience moulds the infant, child, adolescent, and adult into a unique individual. According to Locke, parents should instruct, reward, and discipline young children, gradually relaxing their authority as children grow. In our opening vignette, Locke would have advised Kendra that childcare experiences will undoubtedly affect Joshua's development (although Locke would not specify how).

During the following century, Locke's view was challenged by the French philosopher Jean-Jacques Rousseau (1712–1778), who believed that newborns are endowed with an innate sense of justice and morality that unfolds naturally as the child grows. During this unfolding, children move through the same developmental stages that we recognize today—infancy, childhood, and adolescence. Rather than emphasizing parental discipline, Rousseau argued that parents should be responsive, and he encouraged them to be receptive to their children's needs, as he explained in his book *Émile*, written in 1762. Rousseau would have downplayed the impact of childcare experiences per se on Joshua's development, instead emphasizing the value of caregivers who are responsive to Joshua's needs.

We can see in Rousseau's and Locke's views the basic nature–nurture argument: Are we what we are because of innate characteristics (nature), or do we become what we are due to environmental influences (nurture)? These two opinions have often been placed in opposition to one another, as we will see in further examination of the history, theories, and fundamental themes of developmental psychology. We will also see that interaction between these two types of influence must be considered as well.

Rousseau shared Plato's view that children begin their developmental journey well prepared with a stockpile of knowledge. Locke, like Aristotle two thousand years before, believed that children begin their journey packed lightly, picking up necessary knowledge along the way, through experience. These debates might have continued to be solely philosophical for millennia except for a landmark event: the emergence of child development as a science.

Origins of a New Science

The push toward child development as a science came in part from the significant role played by children themselves during the momentous transformation of the working environment in England known as the Industrial Revolution, which began in the mid-18th century. For much of recorded history, as soon as children no longer needed constant care from adults—by about five to seven years of age—they were considered grown up and entered the world of work. Many children worked at home, in the fields, or were apprenticed to learn a trade. Beginning in the mid-1700s, England moved from a largely rural culture relying on agriculture to an urban-oriented society organized around factories, especially textile mills. Children moved with their families to cities and worked long hours in factories and in mines under horrendous conditions and for little pay (Postman, 1982). Accidents were common, and many children were maimed or killed. In textile mills, for example, the youngest children often had the hazardous job of picking up loose cotton from beneath huge power looms while the machines were in operation.

Reformers, appalled at these conditions, worked hard to enact legislation that would limit child labour and put more children in schools. These initiatives were the subject of political debates throughout much of the 1800s; after all, factory owners

were among the most powerful people in Britain, and they adamantly opposed efforts to limit access to plentiful cheap labour. But the reformers ultimately carried the day and, in the process, made the well-being of children a national concern.

Another major event that set the stage for the new science of child development was the publication of Charles Darwin's theory of evolution. Darwin (1859) argued that individuals within a species differ; some individuals are better adapted to a particular environment, making them more likely to survive and to pass along their characteristics to future generations. Some scientists of the day noted similarities between Darwin's description of evolutionary change within species and the age-related changes in human behaviour. **This prompted many scientists, including Darwin himself, to write what became known as *baby biographies*—detailed, systematic observations of individual children.** The observations in the biographies were often subjective, and conclusions were sometimes reached on the basis of minimal evidence. Nevertheless, the systematic and extensive records in baby biographies paved the way for objective, analytic research.

baby biographies
Detailed, systematic observations of individual children, often by famous scientists, that helped pave the way for objective research on children.

Taking the lead in this new science at the dawn of the 20th century was G. Stanley Hall (1844–1924), who generated theories of child development based on evolutionary theory and conducted studies to determine age trends in children's beliefs and feelings about a range of topics. Perhaps more importantly, Hall founded the first English-language scientific journal in which scientists could publish findings from child-development research. Hall also founded a child study institute at Clark University and was the first president of the American Psychological Association.

Meanwhile, in France, Alfred Binet (1857–1911) had begun to devise the first mental tests, which we'll examine in Module 8.2. In Austria, Sigmund Freud (1856–1939) startled the world by suggesting that the experiences of early childhood seemed to account for patterns of behaviour in adulthood. And American John B. Watson (1878–1958), the founder of behaviourism, began to write and lecture on the importance of reward and punishment for childrearing practices. (You'll learn more about Freud's and Watson's contributions in Module 1.2.)

Psychological research in Canada also dates from the late 1800s, when psychology was studied in departments of philosophy, a usual occurrence at that time. In 1920, the psychology department of the University of Toronto became the first to be independent of philosophy (Pols, 2002).

An important figure in the early study of psychology in Canada is James Mark Baldwin (1861–1934). Baldwin, an American and a graduate of Princeton, is known for his research at the University of Toronto, where he was appointed to the department of philosophy in 1889. There he set up the first psychology laboratory in Canada, which began research in 1891 (Hoff, 1992). Baldwin felt that a theoretical basis for experimentation was important and seems to have felt that baby biographies stifled theory, being too focused on observation (Harris, 1985). He himself performed experimental research, for example, on infant handedness, and tested proposals derived from his theories.

The Canadian Psychological Association (CPA) was founded in the late 1930s. The idea was initially proposed in 1938, during the American Association for the Advancement of Science (AAAS) meeting held in June of that year at the Château Laurier hotel in Ottawa. At that meeting, a group of Canadian psychologists met to discuss founding a specifically Canadian organization (Dzinas, 2000). Following this first meeting, a draft constitution was drawn up, and the CPA was founded in 1939 (Dzinas, 2000; Ferguson, 1992).

It was in 1933, however, that the emerging scientific forces in developmental psychology came together in a new interdisciplinary organization called the Society for Research in Child Development (SRCD). Its members included psychologists, physicians, educators, anthropologists, and biologists, all of whom were linked by a common interest in discovering the conditions that could promote children's welfare and foster their development (Parke, 2004). In the ensuing years, SRCD membership has grown to more than 5000 and is now the main professional organization for child-development researchers. SRCD, along with similar organizations devoted to child-development science (e.g., International Society for the Study of Behavioural

Development, International Society on Infant Studies, Society for Research on Adolescence) promotes multidisciplinary research and encourages the application of research findings to improve children's lives.

Progress in developmental psychology was halted by World War II, when most child-development scientists in North America abandoned their research to assist the war effort (Sears, 1975)—for example, Canadian psychologists advised the Royal Air Force in England on training methods (English, 1992; Ferguson, 1992). Many female psychologists also became well known during this time, taking on leading roles in both military and non-military activities (Wright, 1992).

After the war, women became more prominent in the CPA, with some becoming directors on the governing board of the association (Wright, 1992). Psychology as a discipline grew, and by the 1950s and 1960s developmental psychology was thriving, marking the beginning of the modern era of child-development research.

More recently, a new branch of child-development research has emerged. ***Applied developmental science*** **uses developmental research to promote healthy development, particularly for vulnerable children and families** (Lerner et al., 2006). Scientists with this research interest contribute to sound family policy in a number variety of ways (Shonkoff & Bales, 2011). Some ensure that the consideration of policy issues and options is based on factual knowledge derived from child-development research. For example, when government officials need to address problems affecting children, child-development experts provide useful information about children and their development (Fasig, 2002; Shonkoff & Bales, 2011). Others contribute by serving as advocates for children. Working with child-advocacy groups, child-development researchers alert policymakers to children's needs and argue for family policy that addresses those needs. Still other child-development experts evaluate the impact of government policies on children and families (e.g., the effectiveness of provincial regulation of Children's Aid Societies). Finally, one of the best ways to sway policymakers is to create working programs. When researchers create a program that effectively combats problems affecting children or adolescents (e.g., sudden infant death syndrome or teenage pregnancy), this can become powerful ammunition for influencing policy (Huston, 2008).

applied developmental science
A scientific discipline that uses child-development research to promote healthy development, particularly for vulnerable children and families.

Thus, from its origins more than 100 years ago, modern child-development science has become a mature discipline, generating a vast catalogue of knowledge from which exciting discoveries continue to emerge. Scientists actively use this knowledge to improve the lives of children, as we'll see in the Children's Lives features that appear throughout this text. The research that you'll encounter in this text is rooted in a set of developmental theories that provide the foundation of modern child-development research. These theories are the focus of the next module.

Check Your Learning

RECALL

What two events set the stage for the creation of child-development science? Who were the leaders in the new field of child development before the formation of the Society for Research in Child Development?

INTERPRET

Explain the similarities between Rousseau's and Plato's views of child development; how did their views differ from those shared by Locke and Aristotle?

APPLY

Suppose a child-development researcher is an expert on the impact of nutrition on children's physical and emotional development. Describe several different ways in which the researcher might help inform public policy concerning children's nutrition.

1.2 Foundational Theories of Child Development

OUTLINE

LEARNING OBJECTIVES

1. What are the major tenets of the biological perspective?
2. How do psychodynamic theories account for development?
3. What is the focus of learning theories?
4. How do cognitive-developmental theories explain changes in children's thinking?
5. What are the main points of the contextual approach?

Will has just graduated from high school, first in his class. For his mother, Betty, this is a time to reflect on Will's past and ponder his future. Will has always been a happy, easygoing child and he has always been interested in learning. Betty wonders why he is so perpetually good-natured and so curious. If she knew the secret, she laughs, she could write a best-selling book and be a guest on daytime TV shows like Dr. Phil!

Before you read on, stop for a moment and think about Betty's question. How would you explain Will's interest in learning, his good nature, and his curiosity? Perhaps Betty has been a fantastic mother, doing all the right things at just the right time. Perhaps, year after year, his teachers quickly recognized Will's curiosity and encouraged it. Or was it simply Will's destiny to be this way? Each of these explanations is a very simple theory; each tries to explain Will's curiosity and good nature. In child-development research, theories are much more complicated, but their purpose is the same: to explain behaviour and development. **In child development science, a *theory* is an organized set of ideas that is designed to explain and make predictions about development.**

theory
An explanation of principles based on observation and reasoning, for example, an organized set of ideas that is designed to explain development.

Theories lead to hypotheses that we can test in research; in the process, each hypothesis is confirmed or rejected. Think about the different explanations for Will's behaviour. Each one leads to a unique hypothesis. If, for example, teacher encouragement has caused Will to be curious, we hypothesize that he would no longer be curious if his teachers stop encouraging that curiosity. When the outcomes of research are as hypothesized, a theory gains support. When results run counter to the hypothesis, the theory is deemed incorrect and revised. This is why theories are essential for child-development research: Theories are the source of hypotheses for research, which often lead to changes in the theories. The revised theories then provide the basis for new hypotheses, which lead to new research, and the cycle continues. With each step along the way, a theory comes closer to becoming a complete account. In the Spotlight on Theories features throughout this text we'll look at specific theories, the hypotheses derived from them, and the outcomes of the research that tests those hypotheses.

Over the history of child development as a science, many theories have guided research and thinking about children's development. The earliest developmental theories were useful in generating research, and findings from that research led child-development scientists to newer, improved, or different theories. In this module, we describe the earlier theories that provided the scientific foundation for modern ones, because the newer theories described later in this text are best understood in terms of their historical roots.

Some theories share assumptions and ideas about children and development. Grouped together, they form five major theoretical perspectives in child-development research: the biological, psychodynamic, learning, cognitive-developmental, and contextual perspectives. As you read about each perspective in the next few pages, think about how each one differs from the others in its view of development.

The Biological Perspective

According to the biological perspective, intellectual and personality development, as well as physical and motor development, are rooted in biology. One of the first biological theories—maturational theory—was proposed by Arnold Gesell (1880–1961). **According to *maturational theory*, child development reflects a specific and prearranged scheme or plan within the body.** In Gesell's view, development is simply a natural unfolding of a biological plan; experience matters little. Like Jean-Jacques Rousseau 200 years before him, Gesell encouraged parents to let their children develop naturally. Without interference from adults, Gesell claimed, behaviours such as speech, play, and reasoning would emerge spontaneously according to a predetermined developmental timetable.

maturational theory
The view that child development reflects a specific and prearranged scheme or plan within the body.

Maturational theory was eventually discarded because it had little to say about the impact of environment on children's development. However, other biological theories give greater weight to experience. ***Ethological theory* views development from an evolutionary perspective.** In this theory, many behaviours are adaptive—they have survival value. For example, clinging, grasping, and crying are adaptive for infants because they elicit caregiving from adults. Ethological theorists assume that people inherit many of these adaptive behaviours.

ethological theory
A theory in which development is seen from an evolutionary perspective and behaviours are examined for their survival value.

So far, ethological theory seems like maturational theory, with a dash of evolution added. How does experience fit in? Ethologists believe that all animals are biologically programmed in such a way that some kinds of learning occur only at certain ages. **A *critical period* in development is the time when a specific type of learning can take place; before or after the critical period the same learning is difficult or even impossible.**

critical period
A time in development when a specific type of learning can take place; before or after the critical period, the same learning is difficult or even impossible.

One of the best-known examples of a critical period comes from the work of Konrad Lorenz (1903–1989), an Austrian zoologist who noticed that newly hatched geese followed their mother about. Lorenz theorized that goslings are biologically programmed to follow the first moving object they see after hatching. **Usually this was the mother, so following her was the first step in *imprinting*, creating an emotional bond with the mother.** Lorenz tested his theory by showing that if he removed the mother immediately after the geese hatched and replaced it with another moving object, the goslings would follow that object and treat it as "Mother." As the photo shows, the replacement objects could even be humans and, in his early experiments, included Lorenz himself. The gosling had to see the moving object within about a day of hatching, however, or it would not imprint on the moving object. In other words, the critical period for imprinting lasts about a day; when goslings experience the moving object outside of the critical period, imprinting does not take place. Even though the underlying mechanism is biological, experience is essential for triggering the programmed, adaptive behaviour.

imprinting
Learning that occurs during a critical period soon after birth or hatching, as demonstrated by chicks creating an emotional bond with the first moving object they see.

Newly hatched goslings follow the first moving object that they see, treating it as "Mother," even when it's a human.

Ethological theory and maturational theory both highlight the biological bases of child development. Biological theorists remind us that children's behaviour is the product of a long evolutionary history. Consequently, a biological theorist would tell Betty that Will's good nature and his outstanding academic record are both largely products of his biological endowment—his heredity.

The Psychodynamic Perspective

FREUD'S THEORIES. The psychodynamic perspective is the oldest scientific perspective on child development, originating in the work of Sigmund Freud (1856–1939) in

According to Freud's theory, the id would encourage the child on the right to grab the toy away from the other child, but the superego would remind her that doing so would be wrong.

psychodynamic theory
A view first formulated by Sigmund Freud in which development is largely determined by how well people resolve the conflicts they face at different ages.

id
According to Freud, the element of personality that desires immediate gratification of bodily wants and needs; present at birth.

ego
According to Freud, the rational component of the personality that develops during the first few years of life.

superego
According to Freud, the moral component of the personality that has incorporated adult standards of right and wrong.

the late nineteenth and early twentieth centuries. Freud was a physician who specialized in diseases of the nervous system. Many of his patients were adults whose disorders seemed to have no obvious biological causes. As Freud listened to his patients describe their problems and their lives, he became convinced that early experiences establish patterns that endure throughout a person's life. **Using his patients' case histories, Freud created the first *psychodynamic theory*, which holds that development is largely determined by how well people resolve certain conflicts at different ages.**

The role of conflict is evident in Freud's descriptions of the three primary components of personality, which he argued emerge at distinct ages. **The *id* is a reservoir of primitive instincts and drives.** Present at birth, the id presses for immediate gratification of bodily needs and wants. A hungry baby crying illustrates the id in action.

The *ego* is the practical, rational component of personality. The ego begins to emerge during the first year of life as infants learn that they cannot always have what they want. The ego tries to resolve conflicts that occur when the instinctive desires of the id encounter the obstacles of the real world. The ego often tries to channel the id's impulsive demands into more socially acceptable channels. For example, in the photo the child without the toy is obviously envious of the child who has the toy. According to Freud, the id would urge the child to grab the toy, but the ego would encourage the child to play with the peer and, in the process, get to play with the toy.

The third component of personality, the *superego*, is the "moral agent" in the child's personality. It emerges during the preschool years as children begin to internalize adult standards of right and wrong. If the peer in the previous example left the attractive toy unattended, the id might tell the other child to grab it and run, but the superego would remind the child that taking another's toy is wrong.

Freud also proposed stages of development. In his theory, Freud was really concentrating on personality development, but this is also an example of an early stage theory. Freud believed development was structured in psychosexual stages and that we all go through five stages of development, each named for a particular area of the body where attention is focused. In order, the stages are the oral, anal, phallic, latency (when drives are quiescent), and genital (the final, mature self). In the oral stage, pleasure is gained from sucking and exploring with the mouth, just as young babies do. Not surprisingly, this first stage covers infancy and lasts from birth to about 2 years of age. In the anal stage, bowel control is important, as with the toilet training of infants; this stage continues from 2 to 3 years of age. From 3 to 7, the child is in the phallic stage and notices differences between the sexes. Latency, from about age 7 to 11, is a stage wherein energies are sublimated—that is, channelled into childhood activities such as schooling and athletics. Finally, from about the age of 11 through adulthood, is the genital stage or the stage of mature sexuality. Freud believed that conflicts at any stage of development could lead to fixations, where mental energies are occupied in activities reminiscent of that stage.

Today scientists recognize many shortcomings in Freud's theory as a whole (e.g., some key ideas are too vague to be tested in research, and his views of development were based on adults recalling the past, not from observing children directly). Nevertheless, two of Freud's insights have had a lasting impact on child-development research and theory: first, his conclusion that early experiences can have enduring effects on children's development; second, his idea that children often experience conflict between what they want to do and what they know they should do.

ERIKSON'S PSYCHOSOCIAL THEORY. Erik Erikson (1902–1994), one of Freud's students, embraced Freud's idea of conflict but emphasized the psychological and social aspects of conflict rather than the biological and physical aspects. **In Erikson's *psychosocial theory*, development comprises a sequence of stages, each defined by a unique crisis or challenge.** Erikson also proposed that development could continue throughout life, including stages for during adulthood. The complete theory includes eight stages, as shown in Table 1-1. The name of each stage reflects the challenge that individuals face at a particular age. For example, the challenge for adolescents is to develop an identity. Adolescents who do not meet this challenge will not establish truly intimate relationships but will become overly dependent on their partners as a source of identity.

psychosocial theory
A theory proposed by Erik Erikson in which personality development occurs in a series of stages as the result of the interaction of maturation and societal demands.

Whether we call them conflicts, challenges, or crises, the psychodynamic perspective emphasizes that the journey to adulthood is difficult because the path is strewn with obstacles. Outcomes of development reflect the manner and ease with which children surmount life's barriers. When children overcome early obstacles easily, they are better able to handle the later ones. Returning to this module's opening vignette, a psychodynamic theorist would tell Betty that Will's cheerful disposition and his academic record suggest that he handled life's early obstacles well, which is a good sign for his future development.

The Learning Perspective

Learning theorists endorse John Locke's view that the infant's mind is a blank slate on which experience writes. John Watson (1878–1958) was the first theorist to apply this approach to child development, arguing that learning from experience determines what children will be, and with the correct techniques anything could be learned by almost anyone. In Watson's view, experience was just about all that mattered in determining the course of development.

EARLY LEARNING THEORIES. Watson's research was based on the form of learning called *classical conditioning*, first described by Ivan Pavlov. In his famous experiments with dogs, Pavlov showed that a previously neutral stimulus could become associated with a naturally occurring response and eventually come to elicit a similar response on its own. In a simple example, a dog would salivate upon presentation of food—a natural stimulus. Repeatedly pairing the sound of a bell (which initially had no meaning to the dog) with the presentation of food led to an association being made between the two stimuli. Eventually the dog would salivate to the sound of the bell alone—conditioning had occurred. Watson applied classical conditioning procedures

classical conditioning
First described by Ivan Pavlov, who showed that a previously neutral stimulus could become associated with a naturally occurring response and eventually come to elicit a similar response on its own.

Table 1-1 Erikson's Eight Stages of Psychosocial Development

Psychosocial Stage	Age	Challenges
Basic trust versus mistrust	Birth to 1 year	To develop a sense that the world is safe, "a good place"
Autonomy versus shame and doubt	1 to 3 years	To realize that one is an independent person who can make decisions
Initiative versus guilt	3 to 7 years	To develop a willingness to try new things and to handle failure
Industry versus inferiority	6 years to adolescence	To learn basic skills and to work with others
Identity versus identity confusion	Adolescence	To develop a lasting, integrated sense of self
Intimacy versus isolation	Young adulthood	To commit to another in a loving relationship
Generativity versus stagnation	Middle adulthood	To contribute to younger people through child-rearing, childcare, or other productive work
Integrity versus despair	Late life	To view one's life as satisfactory and worth living

to humans, most famously in the conditioning of fear in children. Watson discovered that sudden, loud noise naturally elicited fear in infants. In experiments with an infant referred to as "Little Albert," Watson paired a white rat, which Albert had no fear of initially, with a loud, unpleasant noise that startled Albert. After a few pairings of the rat with the noise, Albert began to show fear at the sight of the rat. Watson believed that this and other experiments showed the application of classical conditioning principles to human behaviour. Although later analyses of Watson's experiments with Little Albert have cast doubt on how clear-cut the findings were (e.g., Harris, 1979)—and his methods would certainly be viewed as unethical today—this experiment remains a classic example of early child-development research. Associating something with a natural response is only one way of learning, however, and other theorists expanded the field by developing different theories.

B. F. Skinner (1904–1990) furthered research on the learning perspective by proposing a different theory of learning. Watson's work had been based on classical conditioning, which required a reflexive response, but what about voluntarily emitted behaviours? **Skinner studied *operant conditioning*, in which the consequences of a behaviour determine whether that behaviour is repeated.** An animal performs, or emits, many behaviours; Skinner focused on how the consequences of a behaviour could lead to that behavioural response being either strengthened or weakened. Skinner showed that two kinds of consequences were especially influential. **A *reinforcement* is a consequence that increases the future likelihood of the behaviour that it follows.** Positive reinforcement consists of giving a reward—such as chocolate, gold stars, or paycheques—to increase the likelihood of a behaviour being repeated. If parents want to encourage their daughter to clean her room, they could use positive reinforcement by rewarding her with praise, food, or money whenever she completes the chore. Negative reinforcement consists of rewarding people by taking away unpleasant things. The same parents could use negative reinforcement by saying that whenever she cleans her room, the child won't have to wash dishes or fold laundry.

operant conditioning
A view of learning, proposed by Skinner, that emphasizes reward and punishment.

reinforcement
A consequence that increases the likelihood that a behaviour will be repeated in the future.

A *punishment* is a consequence that decreases the future likelihood of the behaviour that it follows. Punishment suppresses a behaviour either by imposing something aversive or by withholding something pleasant. If the child fails to clean her room, the parents could punish her by making her do extra chores (adding something aversive) or by not allowing her to watch television (withholding a pleasant event). The use of punishment has drawbacks, however, the main one being that punishment does not identify the desired behaviour. Punishment only says "stop this," not "do that instead." As the examples above show, punishment is not only administration of a negative stimulus such as a slap, although it is often interpreted in this way. Use of physical punishment on children is a controversial issue and one on which there has been a great deal of public debate. Much research shows that reliance on punishment by parents, particularly physical punishment, produces poorer outcomes for child behaviour (e.g., Elgar et al, 2018; MacKenzie et al., 2012; Straus, 2000).

punishment
Applying an aversive stimulus (e.g., a spanking) or removing an attractive stimulus (e.g., TV viewing); an action that discourages the reoccurrence of the response that it follows.

observational learning
Learning by observing, children learn a great deal from others simply by watching them.

social cognitive theory
A theory developed by Albert Bandura that stresses the use of cognition (thinking) in learning; children use reward, punishment, and imitation to try to understand what goes on in their world.

People are often confused by the positive/negative and reinforcer/punisher distinctions when discussing operant conditioning outcomes. One simple way to remember them is to think of positive and negative as mathematical symbols—as in adding and subtracting. Adding something to a situation is positive, removing something from a situation is negative. A reinforcer is something to which people look forward; a punisher is to be avoided. With these distinctions in mind, think of the different possible combinations:

	Reinforcer	Punisher
POSITIVE	Parents reward child for cleaning up her room by giving her a cookie.	Parents punish child for not cleaning up her room by shouting at her.
NEGATIVE	Parental nagging to "go clean your room" stops when the child starts cleaning up.	Child is not allowed to watch television that evening because she did not clean her room.

Applied properly, reinforcement and punishment are indeed powerful influences on children. However, children often learn without reinforcement or punishment. **Children may learn simply by watching those around them, which is known as *imitation* or *observational learning*.** For example, imitation occurs when one toddler throws a toy after seeing a peer do so, or when a school-age child offers to help an older adult carry groceries because she has seen her parents do the same, or, as in the photo, when a son tries to shave like his father.

Throughout their development, children learn much from imitating the actions of others.

imitation
Copying observed behaviours.

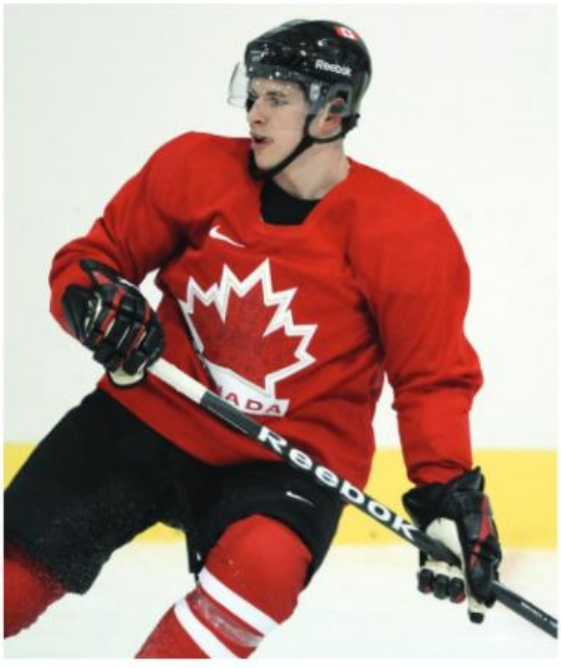
SOCIAL COGNITIVE THEORY. Perhaps imitation makes you think of "monkey-see, monkey-do," of simple mimicking. Early investigators certainly had this view, but later research showed they were wrong. **Albert Bandura (1925–), originally from Alberta and now Professor Emeritus at Stanford University in the United States, developed much of the basis of the *social cognitive theory* of learning.** The "Bobo doll" study (Bandura et al., 1963) is a classic example of both direct observational learning and the fact that observation does not always lead to simple imitation. In this study, children watched an adult physically abuse a large clown doll, performing very specific actions, such as punching the doll on the nose or hitting it with other toys. The children were then led to the same playroom containing all the toys to which the adult had had access, including the Bobo doll. Many of the children performed the exact same behaviours, showing that after seeing an action, children could repeat it. Some did not spontaneously imitate the action, but all the children could do so, if asked to repeat actions or if given incentive, showing that they had acquired the behaviours.

It has also been shown that children are more likely to imitate a person if the person is perceived as popular, smart, or talented. In addition, they are more likely to imitate when the behaviour they see is rewarded than when it is punished. Findings such as these imply that imitation is more complex than sheer mimicry; children look to others for information about appropriate behaviour. When the behaviour of popular, smart peers is reinforced, imitating them makes sense.

self-efficacy
The belief that one is capable of performing a certain task.

Bandura bases his social cognitive theory on this more complex view of reward, punishment, and imitation. Bandura calls his theory *cognitive* because he believes that children are actively trying to understand what goes on in their world; the theory is *social* because, along with reinforcement and punishment, what other people do is an important source of information about the world (Bandura, 2006, 2012).

When someone is as talented as Sidney Crosby, it makes sense for others to try to imitate him—and young children often do just that.



Bandura also argues that experience gives children a sense of *self-efficacy*—beliefs about their own abilities and talents. Self-efficacy beliefs help determine when children will imitate others. A child who believes he is not athletic is unlikely to try imitating Sidney Crosby's hockey skills, despite the fact that Crosby is obviously talented and popular. But another youngster who does believe he is good at hockey *is* likely to imitate Crosby because he believes Crosby is talented, and so it makes sense to imitate him. Thus, whether children imitate others depends on who the other person is, on whether that person's behaviour is rewarded, and on the children's beliefs about their own talents.

Bandura's social cognitive theory is a far cry from Skinner's operant conditioning. The social cognitive child who actively interprets events replaces the operant conditioning child who responds mechanically to reinforcement and punishment. Nevertheless, Skinner, Bandura, and all learning theorists share the view that experience propels

children along their developmental journeys. Returning to this module's opening scenario, all these researchers would tell Betty that she can thank experience for making Will both happy and academically successful.

The Cognitive-Developmental Perspective

cognitive-developmental perspective
An approach to development that focuses on how children think and on how their thinking changes over time.

The *cognitive-developmental perspective* focuses on how children think and on how their thinking changes as they grow. Jean Piaget (1896–1980) proposed the best known of the cognitive-developmental theories. He believed that children naturally try to make sense of their world. Throughout infancy, childhood, and adolescence, youngsters want to understand the workings of both the physical and the social world. For example, infants want to know about objects: What happens when I push this toy off the table? And babies want to know about people: Who is this person who feeds and cares for me?

PIAGET'S THEORY OF COGNITIVE DEVELOPMENT. Piaget argued that as children try to comprehend their surroundings they act like scientists, creating theories about the physical and social worlds. These theories are tested daily by experience, because they lead children to expect certain things to happen. As with real scientific theories, when the predicted events occur, a child's belief in her theory grows stronger. When the predicted events do not occur, the child revises her theory. For example a baby's theory of objects like the rattle she's holding might include the idea that "If I let go, the rattle will fall to the floor." If she drops some other object—a plate or an article of clothing—she will find that it too falls to the floor and she can make the theory more general: Objects that are dropped fall to the floor.

Piaget also believed that at a few critical points in development, children realize their theories have basic flaws. When this happens, children revise their theories radically. These changes are so fundamental that the revised theory is, in many respects, a brand-new theory. Piaget claimed that radical revisions occur three times in development: once at about age two, a second time at about age seven, and a third time just before adolescence. These radical changes mean children go through four distinct stages in cognitive development. Each stage represents a fundamental change in how children understand and organize their environment, and each stage is characterized by more sophisticated types of reasoning. For example, the sensorimotor stage begins at birth and lasts until about age two. As the name implies, sensorimotor thinking is closely linked to the infant's sensory and motor skills. This stage and the three later stages are shown in Table 1-2.

According to Piaget, children's thinking becomes more sophisticated as they develop, reflecting the more sophisticated theories that they create. Returning to

Table 1-2 Piaget's Four Stages Of Cognitive Development

Stage	Approximate Age	Characteristics
Sensorimotor	Birth to 2 years	Infant's knowledge of the world is based on senses and motor skills. By the end of the period, infant uses mental representations.
Preoperational	2 to 7 years	Child learns how to use symbols, such as words and numbers, to represent aspects of the world but relates to the world only through his or her own perspective.
Concrete operational	7 to 11 years	Child understands and applies logical operations to experiences, provided the experiences are focused on the here and now.
Formal operational	Adolescence and beyond	Adolescent or adult thinks abstractly, speculates on hypothetical situations, and reasons deductively about what may be possible.

our opening scenario, Piaget would have little to say about Will's good nature. As for Will's academic success, Piaget would explain that all children naturally want to understand their worlds; Will is simply unusually skilled in this regard. In Module 6.1, we will further explore Piaget's contribution to our understanding of cognitive development and also examine more modern theories.

The Contextual Perspective

Most developmentalists agree that environment is an important force in development. Traditionally, however, most theories of child development have emphasized environmental forces that affect children directly. Examples of direct environmental influences are a parent praising a child, an older sibling teasing a younger one, and a nursery-school teacher discouraging girls from playing with trucks. These direct influences are important in children's lives, but in the contextual perspective they are simply one part of a much larger system in which each element of the system influences all other elements. This larger system includes parents and siblings, as well as important individuals outside of the family, such as extended family, friends, and teachers. The system also includes institutions such as schools, television, the workplace, and places of worship.

All these people and institutions fit together to form a *culture*—the knowledge, attitudes, and behaviour associated with a group of people. Culture can refer to a particular country or people (e.g., French culture), to a specific point in time (e.g., popular culture of the 1990s), or to a group of individuals who maintain specific, identifiable cultural traditions, such as an Indigenous family who participate in a sweet grass smudging ceremony. A culture provides the context in which a child develops, and it is thus an important source of influence on development throughout childhood and adolescence.

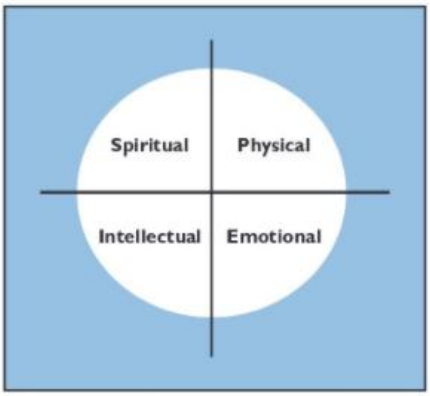
culture
The knowledge, attitudes, and behaviour associated with a group of people.

VYGOTSKY'S THEORY OF CONTEXTUAL DEVELOPMENT. One of the first theorists to emphasize cultural context in child development was Lev Vygotsky (1896–1934). Vygotsky, a Russian psychologist, focused on ways that adults convey the beliefs, customs, and skills of their culture to children. Vygotsky believed that because a fundamental aim of all societies is to enable children to acquire essential cultural values and skills, every aspect of a child's development must be considered against this backdrop. For example, most parents in Canada want their children to work hard in school and to be admitted to college or university. In the same way, Efe parents living in central Africa want their children to learn to gather food, build houses, and, as you can see in the photo below, hunt; these skills are fundamental to the Efe because they are critical for survival in their environment. Vygotsky viewed development as an apprenticeship in which children develop while they work with skilled adults, including teachers and parents. In Module 6.2, we'll learn more about Vygotsky's distinctive contributions to our understanding of cognitive development.

According to the contextual view, parents help children master the essential values and skills of their culture, such as learning how to hunt.

Returning to our opening vignette, Vygotsky would agree with learning theorists in telling Betty that the environment has been pivotal in her son's amiable disposition and his academic achievements. However, the contextual theorist would insist that "environment" means much more than the reinforcements, punishments, and observations that are central to learning theory. The contextual theorist would emphasize the manner in which Betty had conveyed the values of curiosity and of academic success to her son; Betty's membership in a cultural group that values doing well in school also contributed to Will's development.

Figure 1-1 The holistic balance of systems, where the individual is embedded in their social and cultural environment, can be represented by the circle of the medicine wheel (after Castellano, 2002).



As we think about families, it is tempting to believe that parents' actions are what really matter—that through their behaviour, parents directly and indirectly determine their children's development. This view of parents as "all-powerful" was part of early psychological theories (e.g., Watson, 1925), but most theorists now view families from a contextual perspective. That is, families form a system of interacting elements, with parents and children influencing one another (Cox & Paley, 2003; Schermerhorn & Cummings, 2008), and families are part of a much larger system that includes extended family, friends, and teachers as well as institutions that influence development (e.g., schools).

BRONFENBRENNER'S THEORY OF ECOLOGICAL SYSTEMS. This system's view of children and families is exemplified in a theory proposed by Urie Bronfenbrenner (1995; Bronfenbrenner & Morris, 2006) that holds that the developing child is embedded in a series of complex and interactive systems. Interestingly, this systems theory approach is very similar to Indigenous Canadians' holistic views of life structures, where the individual is necessarily embedded in their social and cultural environment (Carriere & Richardson, 2013; Castellano, 2002; Rose, 2018). This holistic balance is represented by a form of the circle of the medicine wheel—shown in Figure 1-1—and concentric circles of influence are also often used to illustrate the interdependence of interacting systems (Castellano, 2002). As Figure 1-2 shows, in ***Ecological Systems Theory*, in a similar way, the environment is divided into five components: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem**.

Ecological Systems Theory
A theory in which the environment is divided into five components: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem.

microsystem
According to Bronfenbrenner, the people and objects that are present in one's immediate environment.

mesosystem
According to Bronfenbrenner, the interrelations between different aspects of the microsystem.

exosystem
According to Bronfenbrenner, social settings that influence one's development even though one does not experience them firsthand.

macrosystem
According to Bronfenbrenner, the cultural and subcultural settings in which the microsystem, mesosystem, and exosystem are embedded.

At any point in life, the *microsystem* consists of the people and objects in an individual's immediate environment. These are the people closest to a child, such as parents, siblings, and other close family members. Some children have more than one microsystem; for example, a young child might have the microsystems of the family and of the daycare setting. As you can imagine, microsystems strongly influence development.

Microsystems themselves are connected to create the *mesosystem*. The mesosystem represents the fact that what happens in one microsystem is likely to influence what happens in others. Perhaps you have found that a stressful day at work or school can make you grouchy at home. This indicates that your mesosystem is alive and well; your microsystems of home and work are connected emotionally for you.

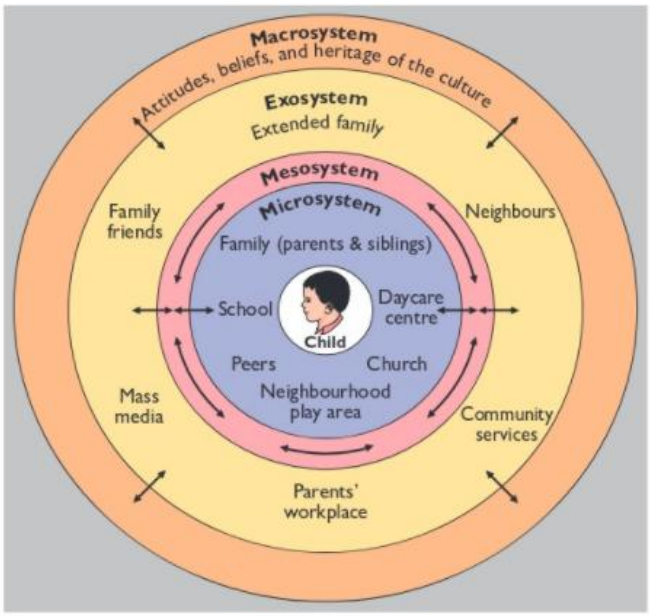
The *exosystem* refers to social settings that a person may not experience first-hand but that still influence development. For example, a mother's work environment is part of her child's exosystem, because she may pay more attention to her child when her work is going well and less attention when she is under a great deal of work-related stress. Although the influence of the exosystem is at least second-hand, its effects on the developing child can be quite strong. Consider a parent who is having a tough day at work; do you think their parenting at home after work will be at its best? Probably not, which means that the workplace has affected the child's development.

The broadest environmental context is the *macrosystem*, the subcultures and cultures in which the microsystem, mesosystem, and exosystem are embedded. A mother, her workplace, her child, and the child's school are part of a larger cultural setting, such as Chinese Canadians living in British Columbia or Italian Canadians living in large cities like Toronto and Montreal. Members of specific cultural sub-groups share a common identity, a common heritage, and common values. The macrosystem evolves with successive generations; what is true about a particular culture today may or may not have been true in the past and may or may not be true in the future. Thus, each successive generation of children develops in a unique macrosystem.

Finally, these systems all change over time, in a dimension known as the *chronosystem*. This dimension reminds us that microsystem, mesosystem, exosystem, and macrosystem are not static but are always in flux. For example, the child's microsystem changes when an older sister leaves home to attend college, and the child's exosystem changes when a mother leaves an easy but low-paying job for a more challenging but higher-paying job. And, of course, children themselves change over time, which often influences the way in which they are affected by the other elements in the system. For example, a family's move to a distant city may affect a school-age child more than a toddler because the older child must change schools and replace long-time friends (Adam, 2004).

When viewed as part of an interactive system like the one shown in Figure 1-2, parents still influence their children, both directly (for example, by encouraging them to study hard) and indirectly (for example, by being generous and kind to others). However, the influence is not exclusively from parent to children but is mutual: Children influence their parents, too. By their behaviours, attitudes, and interests, children affect how their parents behave toward them. When children resist discipline, for example, parents may become less willing to reason with them and more inclined to use force.

Figure 1-2 Bronfenbrenner's Ecological Systems Theory views the child as being embedded in a series of interacting systems.



chronosystem
In Bronfenbrenner's systems view, the idea that the microsystem, mesosystem, exosystem, and macrosystem are not static but change over time.

Even more subtle influences become apparent when families are viewed as systems of interacting elements. For example, fathers' behaviours can affect mother–child relationships. A demanding husband may leave his wife with little time, energy, or interest in helping her son with his homework. Or when siblings argue constantly, parents may become preoccupied with avoiding problems rather than encouraging their children's development. Children may live in a variety of family arrangements, an issue which can particularly affect Indigenous children. For example, according to Statistics Canada figures, nearly half of all children under age 14 who are in foster care are Indigenous children (Statistics Canada, 2017a).

These examples show that narrowly focusing on parents' impact on children misses the complexities of family life. But there is even more to the systems view. The family itself is embedded in other social systems, such as neighbourhoods, schools, and religious institutions (Johnson, 2012; Parke & Buriel, 1998); these other institutions can affect family dynamics. Sometimes they simplify child-rearing, as when neighbours are trusted friends and can help care for each other's children. At other times, however, they complicate child-rearing. Grandparents who live nearby can create friction within the family. Having a supportive relationship with a member of the community can aid a child, however, making up for deficiencies in family relationships caused by difficulties such as job loss or divorce. Different cultures can also view children differently, affecting interactions. For example, in Indigenous cultures, children are highly valued and play an important role in the consultation of community practices as well as the transmission of culture (C. Ladouceur, personal communication, 28 January 2020).

Martin Guhn and Hillel Goelman of the University of British Columbia used systems theory to develop recommendations for research and practice in evaluating children's development, well-being, and school readiness. The proposed approach would